

**CP Earth Science Midterm Review12-13****True/False**

Indicate whether the statement is true or false.

- \_\_\_\_\_ 1. In a gas the molecules don't switch positions with each other.
- \_\_\_\_\_ 2. The mass of an object divided by its volume is its density.
- \_\_\_\_\_ 3. Changes in states of matter can occur as a result of an increase or decrease in pressure.

**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 4. All matter is made of substances called \_\_\_\_\_.  
a. atoms c. molecules  
b. elements d. compounds
- \_\_\_\_\_ 5. The nucleus of an atom is made up of \_\_\_\_\_.  
a. electrons and neutrons c. protons and electrons  
b. protons, neutrons, and electrons d. protons and neutrons
- \_\_\_\_\_ 6. Densely packed, ever-changing arrangements of atoms and molecules are \_\_\_\_\_.  
a. solids c. gases  
b. liquids d. plasma
- \_\_\_\_\_ 7. The basic building blocks of matter are \_\_\_\_\_.  
a. atoms c. molecules  
b. elements d. compounds
- \_\_\_\_\_ 8. Igneous rock that cools very quickly when it forms may have a texture that is  
a. smooth and shiny with no visible grain.  
b. multicolored and banded.  
c. coarse grained.  
d. made up of jagged grains.
- \_\_\_\_\_ 9. When all the grains in a rock are large and easy to see, the rock is described as  
a. extrusive.  
b. fine grained.  
c. coarse grained.  
d. nonbanded.
- \_\_\_\_\_ 10. Rock that forms from the cooling of magma below the surface or lava at the surface is called  
a. sedimentary rock.  
b. metamorphic rock.  
c. igneous rock.  
d. coarse-grained rock.

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- \_\_\_\_\_ 11. Where does most metamorphic rock form?
- a. at the surface
  - b. just below the surface
  - c. in ocean waters
  - d. deep underground
- \_\_\_\_\_ 12. Igneous rock that formed from lava that erupted onto Earth's surface is called
- a. extrusive rock.
  - b. intrusive rock.
  - c. clastic rock.
  - d. sedimentary rock.
- \_\_\_\_\_ 13. The most abundant intrusive rock in the continental crust is
- a. slate.
  - b. granite.
  - c. flint.
  - d. quartzite.
- \_\_\_\_\_ 14. A sedimentary rock made up of rock fragments with rounded edges is called
- a. shale.
  - b. sandstone.
  - c. conglomerate.
  - d. breccia.
- \_\_\_\_\_ 15. Chalk formed from sediments made of skeletons of microscopic living things in the ocean must be a(n)
- a. clastic rock.
  - b. organic rock.
  - c. chemical rock.
  - d. igneous rock.
- \_\_\_\_\_ 16. Heat and pressure deep beneath Earth's surface can change any rock into
- a. chemical rock.
  - b. gemstones.
  - c. metamorphic rock.
  - d. sedimentary rock.
- \_\_\_\_\_ 17. The heat that changes a rock into metamorphic rock comes from
- a. the heat of the mantle.
  - b. the sun.
  - c. movements in the crust.
  - d. chemical rocks in the crust.
- \_\_\_\_\_ 18. The texture of a metamorphic rock that has grains arranged in parallel layers is described as
- a. foliated.
  - b. jagged grained.
  - c. coarse grained.
  - d. nonfoliated.

- \_\_\_\_\_ 19. A series of processes on Earth's surface and in the crust and mantle that slowly changes rocks from one kind to another is called
- erosion.
  - crystallization.
  - the rock cycle.
  - evaporation.
- \_\_\_\_\_ 20. Generally, a rock is made up of
- large crystals.
  - a mixture of minerals and other materials.
  - small crystals.
  - a compound of several elements.
- \_\_\_\_\_ 21. What is a fossil?
- any dead organism
  - the preserved remains or traces of an organism
  - a perfect copy of a rock
  - an unusual type of rock
- \_\_\_\_\_ 22. How do most fossils form?
- Living things die and their remains are buried by sediments.
  - The hard parts of an organism dry out in the air.
  - The soft parts of an organism change to stone.
  - Freezing preserves the remains of an organism.
- \_\_\_\_\_ 23. The time it takes for half of the radioactive atoms in a sample of a radioactive element to decay is the element's
- relative age.
  - potassium-argon date.
  - absolute age.
  - half-life.
- \_\_\_\_\_ 24. Radioactive dating enables geologists to determine
- the age of the atoms in a rock.
  - the half-life of a fossil organism.
  - the relative ages of rocks.
  - the absolute ages of rocks.
- \_\_\_\_\_ 25. The geologic time scale is a record of
- the thickness of sedimentary rock layers.
  - the rate of fossil formation.
  - the life forms and geologic events in Earth's history.
  - the time since the evolution of dinosaurs.
- \_\_\_\_\_ 26. The Mesozoic Era is divided into the Triassic, the Jurassic, and the Cretaceous. These divisions of the geologic time scale are called
- periods.
  - eras.
  - unconformities.
  - decades.

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**Modified True/False**

Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.

- \_\_\_\_\_ 27. An educated guess in science is called a conclusion. \_\_\_\_\_
- \_\_\_\_\_ 28. Meteorology is the branch of Earth science that deals with the blanket of air that surrounds Earth.  
\_\_\_\_\_
- \_\_\_\_\_ 29. Identifying rocks, studying glacial movements, and interpreting clues to Earth's history are all topics studied in geology. \_\_\_\_\_
- \_\_\_\_\_ 30. Astronomers study Earth, its neighbors, and other matter in the universe.  
\_\_\_\_\_
- \_\_\_\_\_ 31. Meteorology is the study of materials that make up Earth and the processes that form and change these materials. \_\_\_\_\_
- \_\_\_\_\_ 32. Photosynthesizing stromatolites in shallow marine waters lowered local oxygen levels and set the stage for banded iron formations. \_\_\_\_\_
- \_\_\_\_\_ 33. The oldest rock samples collected from the Moon are approximately 4.6 million years old.  
\_\_\_\_\_
- \_\_\_\_\_ 34. Footprints and trails are examples of trace fossils. \_\_\_\_\_
- \_\_\_\_\_ 35. The law of superposition helps geologists determine the absolute age of a rock layer.  
\_\_\_\_\_
- \_\_\_\_\_ 36. Rock layers are always younger than the faults that cut across them. \_\_\_\_\_
- \_\_\_\_\_ 37. Geologists divide Earth's long history into smaller units that make up the geologic time scale.  
\_\_\_\_\_
- \_\_\_\_\_ 38. On the geologic time scale, the Mesozoic Era is divided into the Triassic, Jurassic and Cretaceous periods.  
\_\_\_\_\_
- \_\_\_\_\_ 39. The era before the Mesozoic Era is the Paleozoic Era. \_\_\_\_\_
- \_\_\_\_\_ 40. Generally, only the soft parts of organisms become fossils. \_\_\_\_\_
- \_\_\_\_\_ 41. Pressure increases from Earth's surface toward the center of Earth. \_\_\_\_\_
- \_\_\_\_\_ 42. Along the Mid-Atlantic ridge, the North American plate and the Eurasian plate are moving apart at a very slow rate. \_\_\_\_\_



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- \_\_\_\_\_ 43. The outermost layer of Earth is called the mantle. \_\_\_\_\_
- \_\_\_\_\_ 44. A(n) element is a substance that cannot be broken down into simpler substances.  
\_\_\_\_\_
- \_\_\_\_\_ 45. A tiny particle that has mass and a positive electrical charge is a(n) neutron.  
\_\_\_\_\_
- \_\_\_\_\_ 46. During radioactive decay, a nucleus can gain or lose protons and neutrons.  
\_\_\_\_\_
- \_\_\_\_\_ 47. Most compounds have the same properties as the elements in them. \_\_\_\_\_
- \_\_\_\_\_ 48. Although a few minerals are composed of single elements, most are made from compounds.  
\_\_\_\_\_
- \_\_\_\_\_ 49. The most common minerals, feldspar and quartz, are carbonates. \_\_\_\_\_
- \_\_\_\_\_ 50. There are at least 3000 known minerals in Earth's crust. \_\_\_\_\_
- \_\_\_\_\_ 51. Minerals can be identified based on their physical and chemical properties.  
\_\_\_\_\_
- \_\_\_\_\_ 52. The most reliable way to identify a mineral is by using a combination of several tests.  
\_\_\_\_\_
- \_\_\_\_\_ 53. Temperatures hot enough to melt rock exist at the base of the lithosphere.  
\_\_\_\_\_
- \_\_\_\_\_ 54. Temperature and pressure decrease with depth beneath Earth's surface. \_\_\_\_\_
- \_\_\_\_\_ 55. Cinder-cone volcanoes have steep sides and are generally the smallest volcanoes.  
\_\_\_\_\_
- \_\_\_\_\_ 56. Volcanoes associated with convergent plate boundaries form the Circum-Pacific and the Mediterranean Belts. \_\_\_\_\_
- \_\_\_\_\_ 57. Rhyolitic magma-fueled volcanoes are especially explosive because rhyolitic magma is highly viscous and contains a large volume of trapped gas. \_\_\_\_\_
- \_\_\_\_\_ 58. The volcanoes in the Circum-Pacific Belt formed as a result of magma rising upward into faults and fractures that form as crustal plates diverge. \_\_\_\_\_

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### Completion

Complete each statement.

59. Plant leaves may form a fossil called a(n) \_\_\_\_\_, a thin layer of carbon on rock.
60. A(n) \_\_\_\_\_ is a gap in the geologic record where some rock layers have been lost because of erosion.
61. The breakdown of unstable carbon-14 to form stable nitrogen-14 is an example of \_\_\_\_\_ decay.
62. The time it takes for one half of the atoms in a sample of a radioactive element to decay is called the element's \_\_\_\_\_.
63. Geologic time begins with the long span of time called \_\_\_\_\_ Time.
64. The present day is part of the \_\_\_\_\_ Era.
65. Scientists hypothesize that Earth formed at the same time as the other planets and the sun, roughly \_\_\_\_\_ years ago.
66. Wegener's hypothesis of \_\_\_\_\_ stated that Earth's continents had once been joined as a single landmass.
67. The \_\_\_\_\_ states that Earth's crust and rigid upper mantle are broken into enormous slabs called plates that move slowly over Earth's surface.
68. \_\_\_\_\_ are places where plates slide horizontally past each other.
69. Places where plates move apart are \_\_\_\_\_.
70. \_\_\_\_\_ occurs when one tectonic plate descends beneath another.
71. Earth's continents were once joined as a single landmass called \_\_\_\_\_.
72. The theory of \_\_\_\_\_ explains how new ocean crust is created at ocean ridges and destroyed in deep-sea trenches.
73. Plates come together at \_\_\_\_\_.
74. The part of the mantle called the \_\_\_\_\_ is made of soft rock that bends like plastic.
75. The hypothesis of \_\_\_\_\_ was that all the continents once were joined as a single supercontinent and have since drifted apart.

76. The lithosphere is broken into sections called \_\_\_\_\_, which float on top of the asthenosphere.
77. Scientists think that the \_\_\_\_\_, made of liquid iron and nickel, moves to produce Earth's magnetic field.
78. Technology called \_\_\_\_\_ uses sound waves to determine the depth of the ocean floor.
79. A mineral, such as salt, is naturally occurring but \_\_\_\_\_, in contrast to sugar, which comes from plants.
80. A mineral can take the shape of one of the six major \_\_\_\_\_ systems.
81. \_\_\_\_\_ make up the most common mineral group.
82. \_\_\_\_\_ is described as either metallic or nonmetallic.
83. A mineral's \_\_\_\_\_ rarely changes, but sometimes does not match its external color.
84. Mohs scale is used to compare the \_\_\_\_\_ of minerals.
85. Mica has perfect \_\_\_\_\_ in one direction; it breaks in sheets.
86. When flint and opals break, they have a unique \_\_\_\_\_ with arclike patterns.
87. In a(n) \_\_\_\_\_, the fracture is caused by horizontal shear and movement is mainly horizontal.
88. A(n) \_\_\_\_\_ forms as a result of horizontal compression and results in a shortening of the crust involved.
89. Along a(n) \_\_\_\_\_, movement is both horizontal and vertical, resulting in a lengthening of the crust involved.
90. The seismic waves that travel along Earth's surface and produce the most severe ground movements are called \_\_\_\_\_.
91. Vibrations that move through the ground carrying the energy released during an earthquake are called \_\_\_\_\_.
92. The scale that measures the strength of an earthquake based on seismic waves and movement along a fault is called the \_\_\_\_\_ scale.

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93. Earthquake waves that vibrate from side to side and up and down only through solids are known as \_\_\_\_\_.

94. The point beneath the surface where rock breaks and an earthquake starts is the \_\_\_\_\_.

### Matching

*Match the following steps of an experiment with their order in the scientific method.*

- |           |           |
|-----------|-----------|
| a. first  | d. fourth |
| b. second | e. fifth  |
| c. third  | f. sixth  |

\_\_\_\_\_ 95. identify the problem

\_\_\_\_\_ 96. gather information through research

\_\_\_\_\_ 97. testing the hypothesis

\_\_\_\_\_ 98. draw conclusions

\_\_\_\_\_ 99. analyze results

\_\_\_\_\_ 100. develop a hypothesis

*Match each term with the correct statement below.*

- |                                 |                        |
|---------------------------------|------------------------|
| a. atoms                        | g. ilmenite and rutile |
| b. color                        | h. magma               |
| c. solid                        | i. crystals            |
| d. usefulness and profitability | j. beauty and rarity   |
| e. lightweight and durable      | k. luster              |
| f. identify                     |                        |

\_\_\_\_\_ 101. A mineral is an inorganic \_\_\_\_\_ with a unique crystal structure.

\_\_\_\_\_ 102. Some minerals are formed when \_\_\_\_\_ cools.

\_\_\_\_\_ 103. The term *crystal system* refers to the patterns that \_\_\_\_\_ form in a crystal.

\_\_\_\_\_ 104. When liquid evaporates, atoms of any dissolved minerals stay behind and form \_\_\_\_\_.

\_\_\_\_\_ 105. \_\_\_\_\_ alone usually is not enough to identify a mineral.

\_\_\_\_\_ 106. Tests for hardness and streak help \_\_\_\_\_ minerals.

\_\_\_\_\_ 107. Two types of \_\_\_\_\_ are metallic and nonmetallic.

\_\_\_\_\_ 108. Titanium is useful because it is \_\_\_\_\_.

\_\_\_\_\_ 109. Two minerals that are ores of titanium are \_\_\_\_\_.

\_\_\_\_\_ 110. Qualities of a stone that make it a gemstone are \_\_\_\_\_.



\_\_\_\_\_ 111. Qualities of a mineral that classify it as an ore are \_\_\_\_\_.

*Match each statement with the correct item below.*

- |                  |                        |
|------------------|------------------------|
| a. caldera       | d. composite volcano   |
| b. batholith     | e. cinder cone volcano |
| c. volcanic neck | f. shield volcano      |

\_\_\_\_\_ 112. Devil's Tower, Wyoming—hard magma core

\_\_\_\_\_ 113. Soufrière Hills volcano—one plate was forced beneath another

\_\_\_\_\_ 114. Yosemite National Park granite domes in California—exposed at Earth's surface by erosion

\_\_\_\_\_ 115. Kilauea, Hawaii—quiet lava flows

\_\_\_\_\_ 116. Crater Lake in Oregon—the top of a volcano collapsed down

\_\_\_\_\_ 117. Parícutin, Mexico—pile of ash and cinders

*Match each item with the correct statement below.*

- |                       |                     |
|-----------------------|---------------------|
| a. batholith          | d. sill             |
| b. Mid-Atlantic Ridge | e. pyroclastic flow |
| c. Pacific Ocean      |                     |

\_\_\_\_\_ 118. Largest type of pluton

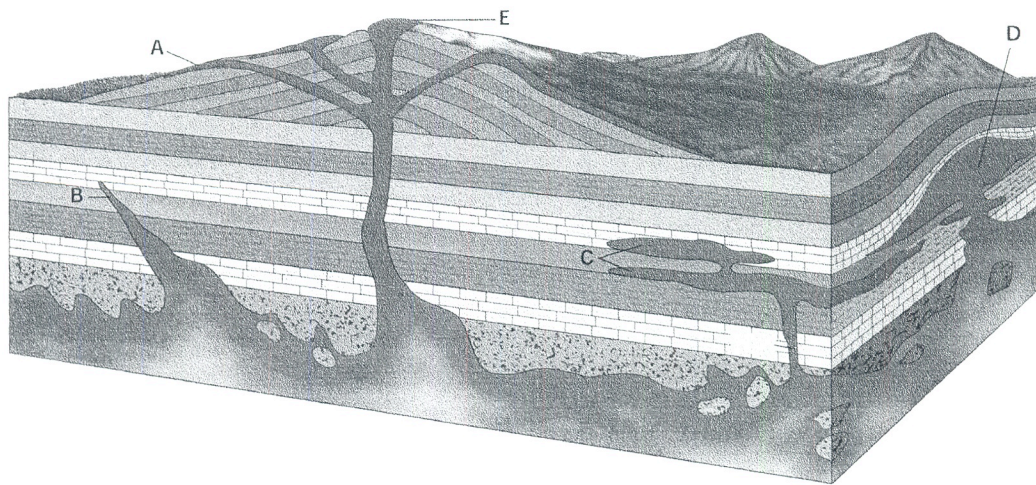
\_\_\_\_\_ 119. Tabular pluton parallel to the rock it intrudes

\_\_\_\_\_ 120. Rapidly moving volcanic material

\_\_\_\_\_ 121. Location of rift or divergent volcanism

\_\_\_\_\_ 122. Location of volcanoes formed as the result of hot spots

*Match each letter that appears on the diagram with the correct feature below.*



\_\_\_\_\_ 123. Laccolith

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- \_\_\_\_\_ 124. Dike
- \_\_\_\_\_ 125. Lava flow
- \_\_\_\_\_ 126. Sill
- \_\_\_\_\_ 127. Volcano

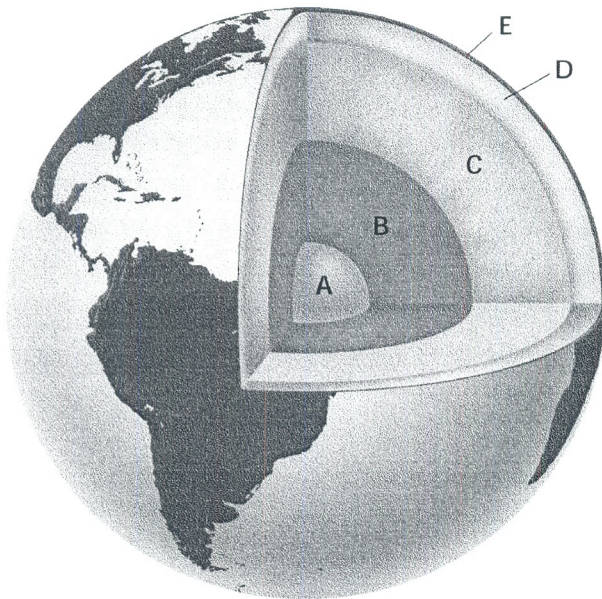
*Match each item with the correct description below. You may use a term more than once.*

- a. surface wave
- b. P-wave
- c. S-wave

- \_\_\_\_\_ 128. Does not pass through Earth's liquid outer core
- \_\_\_\_\_ 129. Does not pass through Earth's interior at all
- \_\_\_\_\_ 130. Squeezes and pulls rocks in same direction as the wave travels
- \_\_\_\_\_ 131. Is refracted by Earth's core
- \_\_\_\_\_ 132. Absence of this kind of waves results in a shadow zone

### Short Answer

133. Using the diagram below, indicate the name of the layer each letter represents. Then describe the process of differentiation as it regards the formation of Earth's crust, mantle, and core.



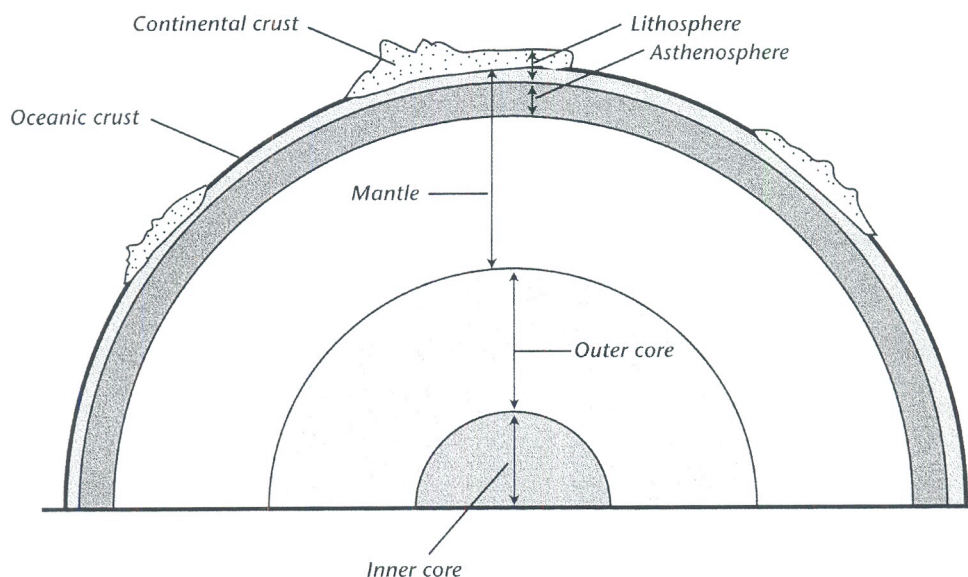
134. Name three pieces of evidence Wegener used to support his hypothesis of continental drift.

135. Complete the table below.

	Type of Boundary	Plates Involved	Direction of Movement	Resulting Feature or Phenomena
1	Divergent			Ocean ridges
2			Moving apart	Rift valley
3	Convergent		Toward one another	Deep-sea trench and
4			Toward one another	Volcanic mountain range
5	Convergent			Uplifted mountain range
6		Oceanic-oceanic and Continental-continental	Slide past one another	

Use the diagram to answer each question.

### Earth's Interior

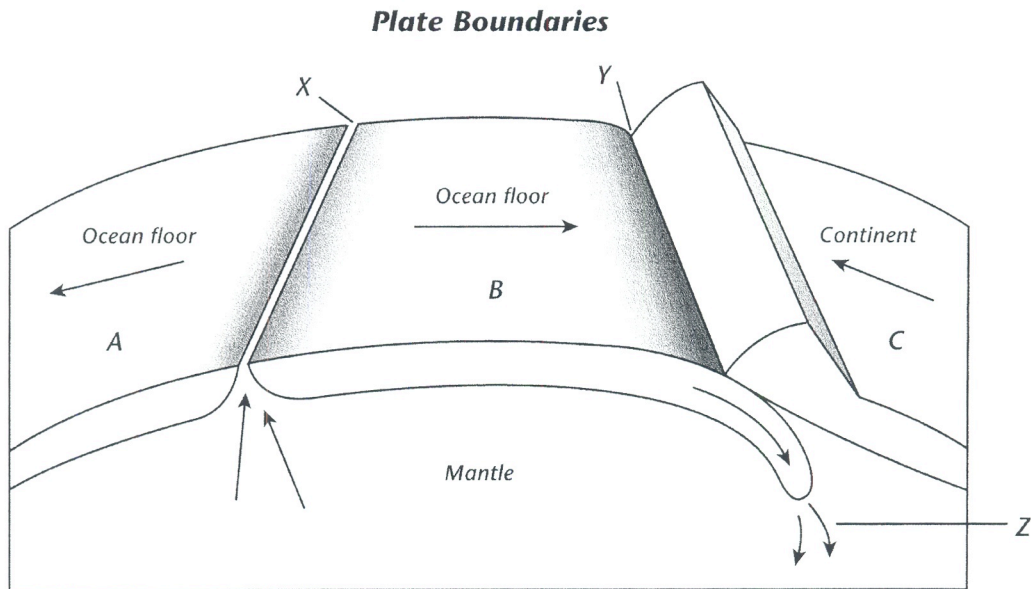


136. Earth's solid inner core is surrounded by the hot, molten metal of which layer?
137. The asthenosphere is part of which layer of Earth?
138. Pressure increases with depth toward the center of Earth. In which layer would you expect pressure to be the greatest?



139. According to the theory of plate tectonics, which layer of the earth is broken into separate sections called plates?
140. Which layer of Earth is made up partly of crust and partly of mantle material?
141. Based on the diagram, describe one of the major differences between oceanic crust and continental crust.

*Use the diagram to answer each question.*



142. Which type of plate boundary occurs at X?
143. What feature occurs at Y, and how does it form?
144. What is happening at Z?
145. Identify the three plates in the diagram and name the materials that make up each plate.
146. Which type of plate boundary occurs at Y?
147. What feature occurs at X and how does it form?

### Essay

148. Explain how Earth's four spheres work together as a system.



**CP Earth Science Midterm Review12-13**  
**Answer Section**

**TRUE/FALSE**

1. F
2. T
3. T

**MULTIPLE CHOICE**

4. A
5. D
6. B
7. A
8. A
9. C
10. C
11. D
12. A
13. B
14. C
15. B
16. C
17. A
18. A
19. C
20. B
21. B
22. A
23. D
24. D
25. C
26. A

**MODIFIED TRUE/FALSE**

27. F, hypothesis
28. T
29. T
30. T
31. F, Geology
32. F, raised
33. T

- 34. T
- 35. F, relative
- 36. F, older
- 37. T
- 38. T
- 39. T
- 40. F, hard
- 41. T
- 42. T
- 43. F, crust
- 44. T
- 45. F, proton
- 46. T
- 47. F, different properties from
- 48. T
- 49. F, silicates
- 50. T
- 51. T
- 52. T
- 53. T
- 54. F, increase
- 55. T
- 56. T
- 57. T
- 58. F, rift zones, Iceland

## COMPLETION

- 59. carbon film
- 60. unconformity
- 61. radioactive
- 62. half-life
- 63. Precambrian
- 64. Cenozoic
- 65. 4.6 billion
- 66. continental drift
- 67. theory of plate tectonics
- 68. Transform boundaries
- 69. divergent boundaries
- 70. Subduction
- 71. Pangaea
- 72. seafloor spreading
- 73. convergent boundaries
- 74. asthenosphere
- 75. continental drift

- 76. plates
- 77. outer core
- 78. sonar
- 79. inorganic
- 80. crystal
- 81. Silicates
- 82. Luster
- 83. streak
- 84. hardness
- 85. cleavage
- 86. fracture
- 87. strike-slip fault
- 88. reverse fault
- 89. normal fault
- 90. surface waves
- 91. seismic waves
- 92. Richter Scale
- 93. S waves
- 94. focus

**MATCHING**

- 95. A
- 96. B
- 97. D
- 98. F
- 99. E
- 100. C
- 101. C
- 102. H
- 103. A
- 104. I
- 105. B
- 106. F
- 107. K
- 108. E
- 109. G
- 110. J
- 111. D
- 112. C
- 113. D
- 114. B
- 115. F
- 116. A

117. E

118. A

119. D

120. E

121. B

122. C

123. D

124. B

125. A

126. C

127. E

128. C

129. A

130. B

131. B

132. B

**SHORT ANSWER**

133. Layer A is the inner core; B is the outer core; C is the lower mantle; D is the upper mantle; E is the crust. Differentiation occurred when lava flowed from Earth's partly molten interior and the less-dense minerals concentrated near the surface while the denser minerals were concentrated deeper. The heavier, denser materials concentrated at the core. The less-dense minerals accumulated near the surface and became the crust. Minerals that are denser than those found in the crust formed the mantle.

134. Wegener used the puzzlelike fit of continental coastlines, the similarity of rock groups on separated continents, the presence of similar fossils on separated continents, and the coal beds and glacial deposits as evidence of continental drift.

135.

	Type of Boundary	Plates Involved	Direction of Movement	Resulting Feature or Phenomena
1	Divergent	[Oceanic-ocean]	[Move apart]	Ocean ridges
2	[Divergent]	[Continental-continental]	Moving apart	Rift valley
3	Convergent	[Oceanic-oceanic]	Toward one another	Deep-sea trench and [island arc]
4	[Convergent]	[Oceanic-continental]	Toward one another	Volcanic mountain range
5	Convergent	[Continental-continental]	[Toward one another]	Uplifted mountain range
6	[Transform]	Oceanic-oceanic and Continental-continental	Slide past one another	[Earthquakes]

136. the outer core



- 137. the mantle
- 138. the inner core
- 139. the lithosphere
- 140. the lithosphere
- 141. Continental crust is thicker.
- 142. divergent
- 143. At Y, a deep-ocean trench is forming. Two plates of different densities are colliding. The oceanic crust is denser and plunges beneath the continental crust, forming a trench.
- 144. The edge of plate B is plunging beneath plate C and melting in the mantle.
- 145. Plates A and B are made of oceanic crust and lithosphere. Plate C is made of continental crust and lithosphere.
- 146. convergent
- 147. At X, the mid-ocean ridge occurs along a boundary between two oceanic plates. The plates are moving apart, causing molten material to repeatedly rise from the mantle, erupt, and harden as solid rock along the center of the ridge.

## ESSAY

- 148. Earth is made up of four spheres: the lithosphere, hydrosphere, atmosphere, and biosphere. Changes in any part of the Earth's system affects all other spheres. For example, storms form in the atmosphere which bring rain. The rain affects the hydrosphere by increasing the amount of water in a river, which affect the flow of the river. Flowing rivers change the surface of the lithosphere. Plants and animals in the biosphere depend on water to survive.